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TC 1700

SMX 3099.11 (98-14CIP3DIV2)  
PATENT

Remarks

Claims 163-165, 167, 168, 178 and 180 are herewith amended. Claims 172-177 are cancelled, and new claims 182-195 are added. Accordingly, upon entry of this amendment, claims 163-171 and 178-195 will be pending.

Rejection under 35 USC §112

The term "reactor" is deleted from claim 163. In lieu thereof, the claim is amended to specify "combinatorial chemistry reactor apparatus". The claim is further amended to specify seals for maintaining the reaction mixtures under pressure when the valves are open during delivery of fluid from the probe. Similarly, claim 180 is amended to specify that the reactants are maintained under pressure during injection while the valve is open. In view of these amendments, applicants request that the §112 rejection be withdrawn.

Rejection under 35 USC §102

In addition to the amendments referenced above, claims 163-171 are further amended to specify that the each valve is operable to close before the probe is withdrawn from a respective fill port. (See page 50, lines 25-26 of the present application.) As thus amended, these claims are patentable over the prior art of record, including Lebl et al. U.S. Patent No. 6,045,755.

It will be noted in this regard that while the Lebl et al. patent shows a variety of vessel sealing arrangements, the patent fails to show any arrangement where the operative valve closes before the syringe is withdrawn. For example, in Figs. 7-10, the valves to the vessels are opened and closed simultaneously by moving valve rods/linkages. However, there is no disclosure that there is any injection under pressure or that the valves close before the syringe is withdrawn to maintain pressure in the vessels. Figs. 11A and 11B show vessels with puncturable septa, but there is no teaching either

of injection while the contents of the vessels are under pressure, or the claimed combination of valves and seals to allow injection under pressure. Figs. 12A and 12B show an alternative septum assembly, but this assembly is tightened to seal the vessel after "the fluid handling is complete" (Col. 25, lines 58-65). Thus, this embodiment also fails to teach injection under pressure, or the closure of a valve before the probe is withdrawn from a respective fill port, as claimed.

For these reasons, amended claims 163-171 are believed to be in condition for allowance.

Non-Statutory Double Patenting Rejection

- \* Enclosed herewith is a terminal disclaimer disclaiming the portion of any term beyond expiration of U.S. Patent No. 6,306,658. Accordingly, withdrawal of this rejection is requested. Please charge the Terminal Disclaimer fee to deposit account No. 50-0496.

New Claims 182-195

New claims 182-195 are added to further define the pressure injection aspect of applicants' invention and are submitted as allowable over the prior art.

Fee for Additional Claims

Please charge deposit account No. 50-0496 for the additional claim fees in the amount of \$126. The Commissioner is hereby authorized to charge any under payment or credit any over payment to Deposit Account No. 50-0496.

Conclusion

In view of the foregoing, favorable reconsideration and allowance of this application is requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claim 163 has been amended as follows:

163. (once amended) [Apparatus] Combinatorial chemistry reactor apparatus for the parallel processing of reaction mixtures under pressure, comprising

[a reactor,]

vessels [in the reactor] for containing said reaction mixtures under pressure, and

an injection system for introducing fluid into the vessels at pressures different from ambient pressure, said injection system comprising:

a movable fluid delivery probe;

fill ports for receiving the probe, said probe being movable from one fill port to another to deliver fluid;

conduits connecting the fill ports and respective vessels; [and]

valves for opening and closing said conduits, each valve being operable to open to permit the delivery of fluid from the probe to a respective vessel at a pressure different from ambient pressure, and to close before the probe is withdrawn from a respective fill port; and

seals for maintaining the reaction mixtures under pressure when the valves are open during delivery of fluid from the probe.

Claim 164 has been amended as follows:

164. (once amended) Apparatus as set forth in claim 163 wherein each fill port is configured for the insertion of said probe therein, said [apparatus further] seals comprising a seal in each fill port for sealing engagement with the probe when the probe is inserted in the fill port.

Claim 165 has been amended as follows:

165. (once amended) Apparatus as set forth in claim 164 wherein said valves are located in said conduits downstream from respective fill ports[, and wherein each valve is operable to close before the probe is completely withdrawn from a respective fill port].

Claim 167 has been amended as follows:

167. (once amended) Apparatus as set forth in claim 163 [wherein said reactor comprises] further comprising a reactor block having a series of wells therein extending down from an upper surface of the block [for removably receiving said vessels therein], liners removably received in said wells forming said vessels, and a manifold mounting the fill ports generally adjacent the upper surface of the reactor block, said conduits comprising passages in the manifold in fluid communication with said fill ports for flow of fluid from the probe to said vessels.

Claim 168 has been amended as follows:

168. (once amended) Apparatus as set forth in claim 167 wherein each fill port comprises a body attached to said manifold, and a bore through the body in fluid communication with a respective passage in said manifold, [and] said seals comprising a seal in said bore adapted for sealing engagement with the probe when the probe is inserted in said bore.

Claims 172-177 have been cancelled.

Claim 178 has been amended as follows:

178. (once amended) Apparatus for the parallel processing of reaction mixtures, comprising

a reactor block having a series of wells therein extending down from an [upper] exterior surface of the block,

[an upper] a removable plate removably secured to said reactor block [over] and facing said [upper] exterior surface thereof, said [upper] removable plate having openings therein in registry with the wells in the reactor block,

removable liners in the wells for containing said reaction mixtures under pressure,

an injection system for introducing fluid into the vessels at pressures different from ambient pressure, said injection system comprising:

a movable fluid delivery probe;

fill ports for receiving the probe, said probe being movable from one fill port to another to deliver fluid;

conduits connecting the fill ports and respective wells;

valves for opening and closing said conduits, each valve being operable to open to permit the delivery of fluid from the probe to a respective well at a pressure different from ambient pressure, and to close after said delivery;

stirring mechanisms attached to said [upper] removable plate and removable with the [upper] plate for stirring said reaction mixtures, said stirring mechanisms extending [down] through the openings in the [upper] removable plate and into respective wells, and

seals for sealing against leakage through said [upper] removable plate openings when the [upper] removable plate is secured to the reactor block.

Claim 180 has been amended as follows:

180. (once amended) A method of conducting a catalytic reaction in a plurality of pressurized vessels in a parallel reactor, said method comprising:

(1) loading each of said vessels with gaseous and liquid reactants;

(2) allowing said reactants to reach equilibrium with respect to the concentration of gaseous reactant in the liquid reactant at a pressure greater than about 10 psig;

(3) inserting a fluid delivery probe into one of a plurality of fill ports on the reactor communicating with a first vessel of said plurality of vessels,

(4) injecting a quantity of a catalytic fluid from said probe for delivery through an open valve to the first pressurized vessel while maintaining the reactants under pressure,

(5) effecting closure of the valve after injection of said catalytic fluid,

(6) withdrawing said probe from the fill port after closure of the valve, and

(7) repeating 3-6 for a second vessel of said plurality of vessels.

New claims 182-195 have been added.